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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,893	03/15/2004	Ming-Hong Hung	DW0087USNA	1499

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EXAMINER
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WU, IVES J

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 04/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/800,893	<b>Applicant(s)</b> HUNG ET AL.	
	<b>Examiner</b> Ives Wu	<b>Art Unit</b> 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/30/04</u> . | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- (1). Claims 1,5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stivers (EP0842980A2) in view of Farnham et al (US005134211A).

The limitation of parent **claim 1** in present invention relates to a curable (1). **fluoroelastomer composition** comprising: (2). A **fluorinated ether having general formula of  $-\text{[CF}_2\text{CFH-O-Rf-CF}_2\text{CH}_2\text{O]}_n-$**  wherein n is such that  $M_w$  is between 2000 and 100,000. (3). **Rf** is selected either from  **$-(\text{CF}_2)_s-$**  where s is 1 to 10 or  **$-\text{[CF}_2\text{CF}(\text{CF}_3)\text{O]}_t(\text{CF}_2)_u-$**  where u is 1 to 10 and t is 1 to 20. (4). A **curing agent**.

As to claim 1, Stivers (EP0842980A2) **teaches a fluorocarbon elastomer** composition comprising a fluorocarbon elastomer gum, such as a copolymer of vinylidene fluoride and hexafluoropropene, page 3, line 17-18; the resulting composition is further compounded with a **crosslinking agent**, for example, 2,2-bis-(4-hydroxyphenyl) hexafluoropropane, to obtain curable composition, page 3, line 48-50.

Stivers (EP0842980A2) **does not teach** a fluorinated polyether having the general formula in the present claim 1.

However, Farnham et al (US005134211A) discloses a polymer consisting essentially of the repeat formula  $-\text{[CF}_2\text{CFH-O-R}^4\text{-CF}_2\text{CH}_2\text{O]}_n-$ , wherein  $\text{R}^4$  is perfluoroalkylene. In preferred polymers  $\text{R}^4$  is  $-(\text{CF}_2)_s-$ , wherein s is 1 to 10, or  $\text{R}^4$  is  $-\text{[CF}_2\text{CF(CF}_3\text{)O]}_t(\text{CF})_u-$ , wherein u is 1 to 10 and t is 1 to 20, Col. 5, line 25-31.

As to the number **n**, Farnham et al (US005134211A) is silent about the range which generates  $M_w$  from 2000 to 100,000, however, it is believed that the  $M_w$  inherently possesses this range because n is **not limited** in Farnham et al (US005134211A) teaching.

The advantages of using fluorinated polyether with this general formula:  $-\text{[CF}_2\text{CFH-O-Rf-CF}_2\text{CH}_2\text{O]}_n-$  is to improve fluoroelastomer properties at low temperature by decreasing its glass transition temperature such as elasticity and this fluorinated polyether is compatible with most fluoroelastomer such as vinylidene fluoride. Such composition will become a **uniform** compounded mixture for processing.

It would have been obvious at the time of applicant's invention to modify Stivers (EP0842980A2) teaching of fluorocarbon elastomer by including Farnham et al (US005134211A) teaching of a novel fluorovinyl polyether because it will achieve the advantages as mentioned above by copolymerization.

With combination of both teaching, it would provide applicant's invention as addressed in claim 1.

Therefore, claim 1 is rejected.

As to dependent **claim 5**, Stivers (EP0842980A2) disclose the fluoroelastomer polymers which may be compounded in accordance with this invention are elastomeric copolymers whose interpolymerized units are derived from two or more of the following fluromonomers: **vinylidene fluoride, hexafluoropropylene, chlorotrifluoroethylene, 2-chlorodifluoroethylene, 1,1-chlorofluoroethylene, fluorinated methyl vinyl ether, tetrafluoroethylene, 1-hydropentafluoropropene, dichlorodifluoroethylene, trifluoroethylene, and mixtures thereof**, page 5, line 51-55; (also see MPEP 2173.05(h) Markush Group).

As to dependent **claim 6**, Stivers (EP0842980A2) discloses Gum D also contains a minor amount of a **bromide-containing cure-site monomer**, page 7, line 23-24; (also see MPEP 2173.05(h) Markush Group).

As to dependent **claim 7**, Stivers (EP0842980A2) discloses the most common crosslinking agent for fluorocarbon elastomer gum is a **polyhydroxy compound**, page 4, line 27; (also see MPEP 2173.05(h) Markush Group).

As to dependent **claim 8**, Stivers (EP0842980A2) discloses the selection of the acid acceptor can decreases the tendency of the compounded gum to scorch, Col. 13, line 56; 3 phr of MgO, preparation 1, page 7, line 50; (also see MPEP 2173.05(h) Markush Group).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(2). Claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Stivers (EP0842980A2).

As to the limitation of **claim 2**,  $M_w$  of fluorinated polyether is limited between 15,000 and 45,000 which falls into the range of prior art  $M_w$  disclosed in Example 1 through Example 16, page 8-13, however, it cannot be determined whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention but has basis for shifting the burden the of the poof to applicant as in *In re Fitzgerald*, 617 F.2d 67, 205 USPS 594 (CCPA 1980). See MPEP 2112-2112.02.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3,4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stivers (EP0842980A2) in view of Farnham et al (US005134211A).

As to claims 3 & 4, Stivers (EP0842980A2) discloses the invention as claimed (see supra paragraph (2)).

Stivers (EP0842980A2) **does not teach** the limitation of number of repeating groups in the general formula of fluorinated polyether in claim 1 which is s for  $-(CF_2)_s-$  group, t & u are for  $-[CFCF(CF_3)O]_t(CF_2)_u-$  and **s is 1-3, t & u are 1**.

However, Farnham et al (US005134211A) **teach** in an especially preferred embodiment **t is 1** and **u is 1**, or **s is 2**, Col. 5, line 31-32.

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Most fluorinated polyethers are liquid, they are low temperature flexibilizer, imparting low temperature flexibility to cured fluorocarbon elastomer composition, however, **more fluorinated ether groups will improve more low temperature properties of the compound** and such low number **s, t, u** of repeating units in Rf group for a fluorinated polyether will increase the fluorinated ether groups **n** to keep the  $M_w$  between 15,000 and 45,000.

It would have been obvious at the time of applicant's invention to modify Stivers (EP0842980A2) teaching of fluorocarbon elastomer by including Farnham et al (US005134211A) teaching of fluorinated polyether, furthermore, its low number of repeating units in Rf group because it will achieve the advantage as mentioned above.

With combination of both teaching, it would provide applicant's invention as addressed in claims 3 & 4.

Therefore, claims 3 & 4 are rejected.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-1114.

The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu  
Art Unit: 2186

**TATYANA ZALUKAEVA**  
**PRIMARY EXAMINER**

A handwritten signature in black ink, appearing to read 'Tatyana', with a long, sweeping horizontal line extending to the right.